REMARKS

Reconsideration and timely allowance of the pending claims, in view of the following remarks, are respectfully requested.

In the pending Office Action, the Examiner rejected claims 1 and 9-11, under 35 U.S.C. §102(b), as being anticipated by Suemasa '185 (U.S. Patent No. 6,089,181); rejected claims 2-8 and 12, under 35 U.S.C. §103(a), as being unpatentable over Suemasa '185 in view of Miller '019 (U.S. Patent No. 5,325,019); and rejected claims 13-17, under 35 U.S.C. §103(a), as being unpatentable over Suemasa '185 in view of Miller '019 and Yoshizako '369 (U.S. Patent No. 5,8944,369).

Prior to this Amendment, claims 1-17 were pending, of which claims 1 and 9-10 were independent. By this Amendment, claims 1-17 have been amended to provide a clearer presentation of the subject matter claimed. Applicants submit that no new matter has been added. As such, claims 1-17 are currently presented for examination, of which claims 1 and 9-10 remain as the sole independent claims.

Applicants respectfully traverse the rejections, under 35 U.S.C. §§102(b), 103(a), for the following reasons:

I. Prior Art Rejections of Independent Claims 1 & 9-10.

Independent claim 1, as amended, sets forth a method comprising:

> providing a radio frequency electrical signal at a fundamental frequency to a plasma drive electrode . . .
>
> providing a supplemental signal to the plasma drive electrode, ***the supplemental signal being controlled separately from the radio frequency electrical signal at a frequency harmonic to the fundamental frequency and having a controlled phase relationship with the fundamental frequency***.

As indicated above, amended claim 1 positively and clearly recites that the supplemental signal is (a) controlled separately from the radio frequency electrical

signal; (b) operates at a frequency harmonic to the fundamental frequency; and (c) has a controlled phase relationship with the fundamental frequency.

These features are amply supported by the Specification. For example, the Specification first discloses that that harmonic power frequencies related to the RF drive fundamental frequency may contribute to the non-uniformity of plasma characteristics. (*See, e.g.*, Specification, par. [0004]). In an effort to control the power frequencies and, thus, provide a more uniform plasma characteristic, the Specification discloses in its numerous embodiments, the use of an RF signal having a fundamental frequency of, for example, 60 MHz, which is electrically directed to harmonic generator **150** and that the harmonic generator **150** generates the third harmonic of the RF signal having a frequency of 180 MHz. (*See, e.g.*, Specification, par. [0022], [0023]; FIG. 3). The phase of the supplemental signal is separately controlled via an RF voltage-controlled phase shifter **155** and RF phase controller **160** so that the phase of the supplemental signal is locked to the fundamental RF signal. (*See, e.g.*, Specification, par. [0023]; FIG. 3). The amplitude of the supplemental signal is separately controlled by a voltage-controlled amplifier **165** and amplifier gain controller **170**. (*See, e.g.*, Specification, par. [0024]; FIG. 3).

Unlike the present invention, there is nothing in any of the applied prior art references, including Suemasa '185, that teach the combination of features recited by independent claim 1. First of all, Applicants strongly object to the unreasonable construction that a lower frequency RF component and a high frequency RF component correspond to the claimed radio frequency electrical signal at a fundamental frequency and a supplemental signal that operates at a harmonic to the fundamental frequency. The relationship between a fundamental frequency and a harmonic frequency is ***not*** that the harmonic frequency is simply higher than the fundamental frequency. Rather, it is a basic principle of physics that an electromagnetic wave operating at a harmonic frequency, specifically operates at an ***integer multiple of the fundamental frequency***. To interpret it any other way would be a serious mischaracterization of basic physics.

Second, the Suemasa '185 reference, teaches nothing about providing a supplemental signal that operates at a frequency harmonic to the fundamental

frequency, as required by claim 1. In particular, the Suemasa '185 reference teaches the use of a first RF signal supply **140** to generate a lower frequency RF signal of 100 KHz to 10 MHz, for example, 380 kHz, and that a second RF signal supply **148** to generate a high frequency RF signal of 10 MHz to 100 MHz, for example, 13.56 MHz, – without a hint as to a harmonic relationship between the lower frequency and high frequency RF signals. (*See, e.g.*, Suemasa '185: col. 4, line 54 – col. 5, line 11).

The Suemasa '185 reference also fails to teach that the supplemental signal has a controlled phase relationship with the fundamental frequency, as required by claim 1. In fact, the Suemasa '185 reference merely states that a modulator **152** is used to adjust the phase at which the high frequency RF signal has a large amplitude. As such, there is nothing that remotely discloses the control of the phase relationship between the fundamental frequency and the supplemental signal.

Moreover, the remaining applied references, namely Miller '019 and Yoshizako '369, fail to cure the deficiencies noted above regarding Suemasa '185. For example, the Miller '019 reference fails to teach the provision of a supplemental signal to the plasma drive electrode – much less that the supplemental signal operates at a frequency harmonic to the fundamental frequency and has a controlled phase relationship with the fundamental frequency, as required by claim 1.

Further, the Yoshizako '369 reference discloses a phase adjustment circuit in a plasma processing apparatus directed to minimizing the discontinuities of output voltages. Like Miller '019, however, Yoshizako '369 fails to teach the provision of a supplemental signal to the plasma drive electrode, which operates at a frequency harmonic to the fundamental frequency.

Accordingly, none of the applied references whether considered alone or in any reasonable combination, can be remotely construed as either anticipating the combination of features recited in claim 1 or, for that matter, rendering the combination of features obvious. As such, claim 1 is clearly patentable over the applied references.

For the reasons discussed above, Applicants submit that claim 1 is patentably distinguishable over the references of record. Accordingly, withdrawal of the prior art rejections, under 35 U.S.C. §102(b) and §103(a), is respectfully requested.

Moreover, because claims 2-8 depend from claim 1, claims 2-8 are patentable for at least the reasons presented with respect to claim 1, as well as for their additional recitations. Further, because independent claims 9-10 include features similar to claim 1, claims 9-10 are patentable for at least the reasons given with respect to claim 1. In addition, because claims 11-17 depend from either claims 9 or 10, claims 11-17 are patentable for at least the reasons presented with respect to claims 1, 9, and 10, as well as for their additional recitations.

II. Conclusion

All matters having been addressed, Applicants respectfully requests the entry of this Amendment, the Examiner's reconsideration of this application, and the immediate allowance of pending claims 1-17.

Applicants' Counsel remains ready to assist the Examiner in any way to facilitate and expedite the prosecution of this matter.

Please charge any fees associated with the submission of this paper to Deposit Account Number 033975. The Commissioner for Patents is also authorized to credit any over payments to the above-referenced Deposit Account.

Respectfully submitted,

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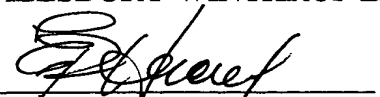

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